IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
MIDLAND/ODESSA DIVISION

COBBLESTONE WIRELESS, LLC., **Plaintiff,** **v.** **APPLE INC.,** **Defendant.**	**Civil Action No. 7:24-cv-00232-ADA** **JURY TRIAL DEMANDED**

PLAINTIFF'S RESPONSIVE CLAIM CONSTRUCTION BRIEF

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I. INTRODUCTION

Apple has found a negative limitation it wishes were in the claims of the '347 Patent and now seeks to force it into both "predistorted" and "path parameter information." But this argument fails on its face. By using the same alleged disclaimer for both terms, Apple concedes that it is not clear and unambiguous as to either term. Such a haphazard approach to claim construction is improper. Instead these terms should be given their plain and ordinary meaning as used throughout the specification and claims

Likewise, the "center frequency" terms have a consistent meaning as used throughout the specification. Apple's construction excludes that meaning. Instead "center frequency" should be construed according to its use in the specification.

II. DISPUTED TERMS

A. "[FIRST/SECOND] CENTER FREQUENCY" ('802 PATENT, CLAIMS 1-2, 10)

The phrases "first center frequency" and "second center frequency" should be construed to mean "the frequency of the carrier that the baseband signal is upconverted to." This interpretation is consistent with the usage of the term "center frequency" throughout the '802 patent, which refers to the carrier center frequency resulting from up-conversion of a baseband signal. A baseband signal represents the data to be transmitted in its raw form. For various known reasons, the baseband signal cannot be wirelessly transmitted in its existing form and must be "up-converted" with a much higher frequency signal called a "carrier signal." Additionally, the '802 patent mentions "center frequency" more than 90 times, including in its background of the invention and in every embodiment. It repeatedly, consistently and exclusively uses "center frequency" to mean the frequency of the carrier signal to which the baseband signal is up-converted. Thus, the claims'

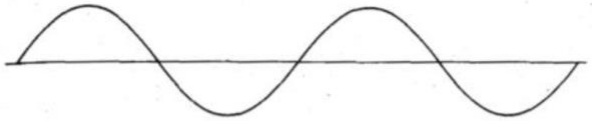
requirement of two "center frequenc[ies]," one greater than the other, means that there has to be two up-conversions to two different carrier signals with two frequencies, one greater than the other.

The claims require transmitting data across two frequency ranges, each with its own "center frequency," with one center frequency "greater than" the other. The '802's specification confirms that the claimed "center frequency" refers to the carrier signal frequency the baseband signal is upconverted to. Therefore, to have two, different "center frequencies," there must be two up-conversions to two carrier signals with different frequencies.

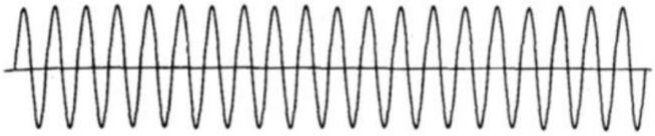
Understanding what a "center frequency" is, however, requires a brief discussion of the underlying technology. Per Professor Cooklev:

> A baseband signal represents the information to be transmitted in its raw form. It can be either an analog electrical waveform (e.g., voice) or a digital signal. Baseband signals generally include frequencies that are very low and close to zero. However, antennas cannot emit zero-frequency signals and are ineffective when the frequency is low. Therefore, the frequency of many baseband signals is too low for them to be effectively or feasibly transmitted over a wireless system. As another issue, frequency ranges are typically assigned (e.g., by a governmental regulatory body) such that baseband frequencies are not available for use.
>
> Therefore, the baseband signal often cannot be transmitted wirelessly. It would instead have to be modulated on a signal at a much higher frequency prior to transmission. This higher frequency signal is called a carrier signal. In such instances, the baseband signal is said to be "up-converted" to the carrier signal's higher frequency. As I will explain later in my declaration, the "center frequency" is the carrier signal frequency to which the baseband signal is up-converted prior to transmission.
>
> The distinction between a baseband signal and a "center frequency" (interchangeably referred to in the '802 as a carrier frequency) to which the baseband signal is up-converted is shown in the figure below. The top image shows

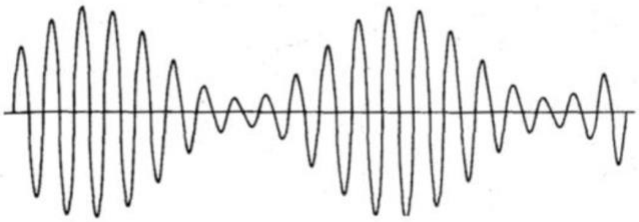
a baseband signal with a low frequency[1]. The middle image shows the carrier signal with a much higher "center frequency" fc. In practice this carrier signal is generated by a local oscillator (LO). The third image shows the carrier signal after it has been amplitude modulated by the baseband signal. This modulated carrier signal is what would be transmitted out of the transmitter.



baseband signal



carrier signal with center frequency (carrier frequency) f_c



carrier signal with center frequency (carrier frequency) f_c
amplitude modulated by the baseband signal

Ex. 1 (Cooklev Decl.) ¶¶ 39-41.

As Professor Cooklev explains, from the outset, the '802 patent makes clear that a "center frequency" is the carrier signal frequency the baseband signal is upconverted to:

> The '802 patent mentions "center frequency" more than 90 times, including in its background of the invention and in all of its embodiments. Every time it is used, it means the frequency of the carrier signal to which the baseband signal is upconverted. In the background of the invention, the '802 patent explains that the

[1] For ease of illustration, the shown signal is real-valued, even though baseband signals are generally complex-valued. Ex. 2 (Cooklev Decl.) ¶ 41 n.1.

> baseband signal is "up-convert[ed]" to the frequency of the "local oscillator (LO)". ['802 Patent] 1:25-27. The output of this up- conversion is amplified and transmitted through the antenna. *Id*., 27- 30. The '802 patent then explains that its prior art Figure 1 transmitter was "limited to up-converting a [baseband] signal to one center frequency (or modulation frequency), which is the LO frequency." *Id*., 1:30-32. Thus, from the very outset of its disclosure, the '802 patent uses "center frequency" as the carrier signal frequency the baseband signal upconverted to.

Ex. 1 (Cooklev Decl.) ¶¶ 42-43.

And, per Professor Cooklev, "center frequencies," and more specifically, the limited use of a single center frequency (or carrier frequency) is a focal point of the background of the invention:

> In light of the background discussion in the '802 patent, the use of two "center frequencies" as claimed is a major focus of the invention. The '802 patent explains that in the prior art the '802 patent sought to improve upon, baseband signals were upconverted to a single carrier frequency and, thus, the amount of information that could be transmitted was limited by the bandwidth around that single up-conversion frequency. ['802 Patent] 1:32-35. To maximize throughput, the prior art increased the bandwidth around the single up-conversion frequency. [*Id.*] 1:25-32.

Ex. 1 (Cooklev Decl.) ¶ 44.

The '802 patent, in this regard, sought to improve upon the prior art by introducing two different center frequencies, a focal point of the claimed inventions reflected in every embodiment of the patent. Per Professor Cooklev:

> In contrast to the prior art, which sought to improve throughput by increasing bandwidth around a single center frequency, the '802 patent increases throughput in an altogether different fashion. It increases throughput by, *inter alia*, disclosing up-conversion to two, different, center frequencies (rather than just one). By utilizing two, different, center frequencies, the bandwidth can effectively be

increased by aggregating the capacities of two different communication channels together.

In accord with this insight, every embodiment of the '802 patent similarly uses "center frequency" to mean the carrier signal frequency the baseband signal is upconverted to. For example, Figure 2, annotated below, is illustrative:

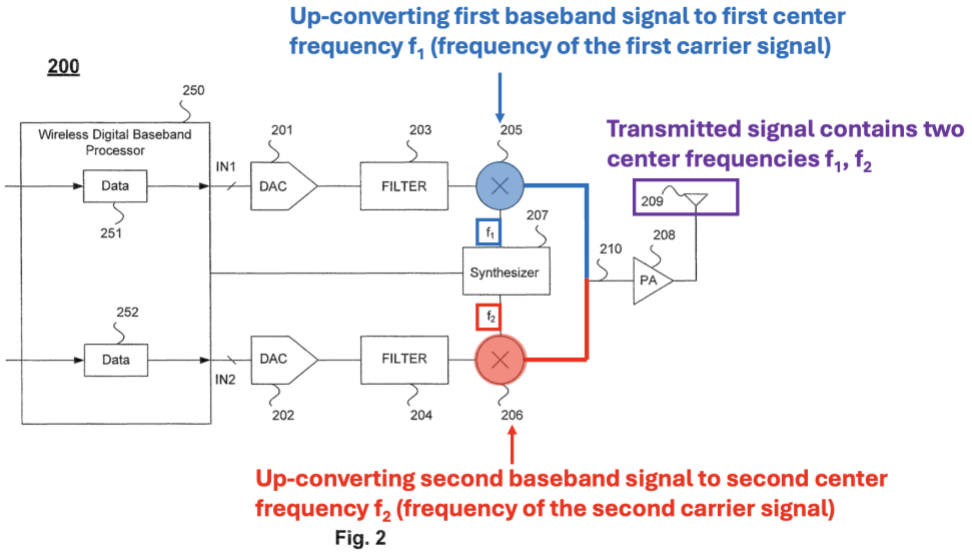


Fig. 2

Figure 2 discloses a wireless digital baseband processor 250 that provides data via two separate digital baseband signals 251 and 252. ['802 Patent] 5:60-66. After being converted to analog in DAC 201/202 and filtered, signals 251 and 252 are fed into respective up-converters 205 and 206. Up-converter 205 accordingly upconverts data 251 into a first "center frequency" f_1 and, similarly, data 252 is up-converted by element 206 into a second "center frequency" f_2. *Id.*, 6:22-56. These two up-converted signals are then combined, amplified and transmitted. *Id.*, 7:4-14. Thus, the '802 patent uses "center frequencies" f_1 and f_2 to mean the carrier signal frequencies the two baseband signals 251 and 252 are upconverted to.

The resulting signal is shown schematically in the annotated version of the '802 patent's Figure 3. The blue region shows the baseband signal upconverted to the first carrier signal with a first center frequency f_1. The red region shows the

baseband signal upconverted to the second carrier signal with a second center frequency f_2.

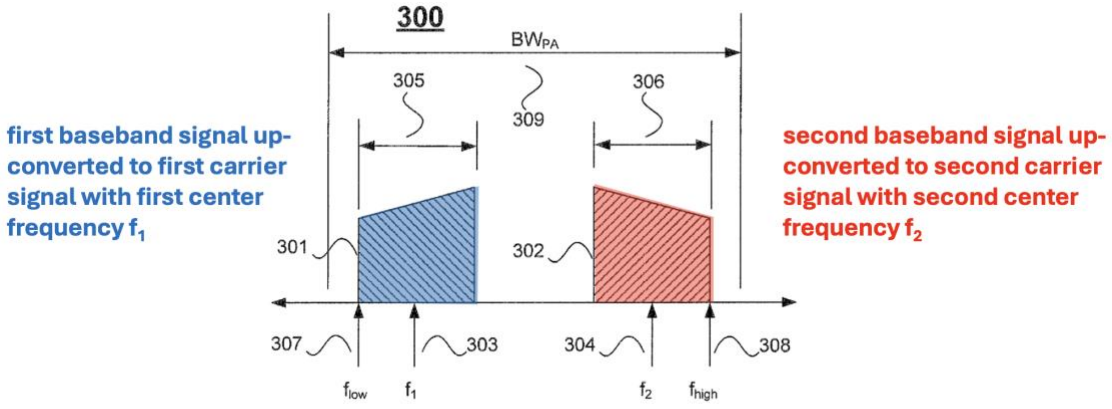


Fig. 3

This very same meaning of "center frequency" as the carrier frequency the baseband signal is upconverted to is reflected in the '802 patent's other embodiments as well. *See, e.g.,* ['802 Patent] 9:9-57 (Figure 6 embodiment); 12:33-58 (Figure 10 embodiment).

Ex. 1 (Cooklev Decl.) ¶¶ 45-49.

Additionally, the '802 Patent uses the terms "center frequency" and "carrier frequency" interchangeably, further reinforcing that "center frequency" means the carrier signal frequency the baseband signal is up-converted to.[2] For example, in connection with its Figure 8 embodiment, the '802 Patent explains:

[2] As the Federal Circuit has recognized, a patent may use different terms interchangeably to mean the same thing. *See Baran v. Med. Device Techs., Inc.*, 616 F.3d 1309, 1316 (Fed. Cir. 2010) (internal citations omitted) (finding "detachable" and "releasably" to have the same meaning); *VirnetX, Inc. v. Cisco Sys., Inc.*, 767 F.3d 1308, 1317-1319 (Fed. Cir. 2014) (reversing broad construction of "secure communication link" in part because "the specification appear[ed] to use the terms 'secure communication link' and 'VPN' interchangeably, suggesting that the inventors intended the disputed term to encompass the anonymity provided by a VPN" and no "embodiment or disclosure" "expressly divorc[ed] those terms"); *see also Haddad v. United States*, 164 Fed. Cl. 28, 66 (2023) (finding that the patent used "authenticity risk rating," "authentication rating," and "ID forgery risks rating" interchangeably).

> This example provides a transmitter for sending the same data across a communication channel at ***two different RF carrier frequencies*** to improve reliability and/or increase the range of the system. … Up-converter 812 includes a second input coupled to an output of a synthesizer 814, which may be used ***to up-convert the analog signal to a RF center frequency f_1***. Similarly, up-converter 813 includes a second input coupled to another output of a synthesizer 814 (or to a different synthesizer), which may be used to ***up-convert the analog signal to a RF center frequency f_2***. … The output of power amplifier 815 is coupled to antenna 850 to ***transmit the digital data simultaneously as an electromagnetic signal using two different RF carrier frequencies.***

Ex. 1 ('802 Patent) at 10:64-11:20. As Professor Cooklev explains:

> As can be seen, here, the '802 patent is using "center frequency" and "carrier frequency" interchangeably. Specifically, the '802 patent explains that it obtains a signal with two different "carrier frequencies" through combining signals that are separately up-converted to "center frequencies" f_1 and f_2. "Carrier frequency" is a term of art and, like "center frequency" in the '802 patent, refers to the carrier signal frequency the baseband signal is upconverted to.

Ex. 1 (Cooklev Decl.) ¶ 51.

In sum, and in accord with the '802 patent's consistent usage, the Court should construe "center frequency" to mean the carrier signal frequency the baseband signal is upconverted to. *Phillips v. AWH Corp*., 415 F.3d 1303, 1315 (Fed. Cir. 2005) ("the specification is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.") (internal quotation and citation omitted); *Medrad, Inc. v. MRI Devices Corp*., 401 F.3d 1313, 1319 (Fed. Cir. 2005) ("We cannot look at the ordinary meaning of the term . . . in a vacuum. Rather, we must look at the ordinary meaning in the context of the written description and the prosecution history.") (citation omitted); *Kinetic Concepts, Inc. v. Blue Sky Med. Grp., Inc*., 554 F.3d 1010, 1018-19 (Fed. Cir. 2009) (limiting "wound" to "skin wounds"

where "[a]ll of the examples described in the specification involve skin wounds"); *VirnetX, Inc. v. Cisco Sys*., 767 F.3d 1308, 1317, 1317-1319 (Fed. Cir. 2014) (reversing construction of "secure communication link" that did not require anonymity, where "the specification appear[ed] to use the terms 'secure communication link' and 'VPN' interchangeably, suggesting that the inventors intended the disputed term to encompass the anonymity provided by a VPN" and no embodiments or disclosure "expressly divorc[ed]" the two terms); *Wisconsin A* (limiting "prediction" to dynamic prediction where all embodiments describe dynamic prediction and allowing the term to cover static prediction "would 'expand the scope of the claims far beyond anything described in the specification'"); *Choon's Design, LLC v. IdeaVillage Prods. Corp*., 776 Fed App'x 691, 695-96 (Fed. Cir. 2019) (construing "at least one pin bar" to extend only to detachable pin bars, where "the specification discloses only loom kits having detachable bases and pin bars").

In re Abbott is particularly instructive. *In re Abbott Diabetes Care Inc*., 696 F.3d 1142 (Fed. Cir. 2012). There, the Patent and Trademark Office had construed "electrochemical sensor" under its plain meaning to include wired connections. *Id*. at 1146. The Federal Circuit reversed, explaining:

> Even more to the point, ***every embodiment disclosed in the specification shows an electrochemical sensor without external cables or wires***. Indeed, the only mention of a sensor with external cables or wires in Abbott' s patents is a single statement addressing the primary deficiency of the prior art. It is true that the specification does not contain an explicit statement disclaiming electrochemical sensors with external cables or wires. …. We have held that "[e]ven when guidance is not provided in explicit definitional format, the specification may define claim terms by implication such that the meaning may be found in or ascertained by a reading of the patent documents." *Irdeto Access, Inc. v. Echostar Satellite Corp.*, 383 F.3d 1295, 1300 (Fed. Cir. 2004) (internal quotation marks omitted). ***Here, Abbott's patents "repeatedly, consistently, and exclusively" depict an electrochemical***

> ***sensor without external cables or wires while simultaneously disparaging sensors with external cables or wires.*** *Id*. at 1303.

Id., 1149-1150. Similar to *In Re Abbott*, the '802 patent "repeatedly, consistently, and exclusively" uses "center frequency" is in every embodiment to mean the carrier frequency the baseband signal is upconverted to.

For the foregoing reasons, the Court should give "center frequency" its plain and ordinary meaning of in light of the patent specification: the carrier signal frequency the baseband signal is up-converted to.

B. THE '347 PATENT

Apple argues for the same negative limitation for both disputed terms of the '347 Patent, excluding the use of a codebook and precoding more generally. *See* Dkt. 32 at 4, 7. As such it is prudent to first address the discussion Apple bases both constructions upon before addressing why they are both wrong.

The '347 Patent addresses the problem of signal interference in wireless communication and in particular, the shortcomings of conventional channel equalization techniques that required "the receiver have additional resources in order to perform the equalization." *See* '347 at 1:6-41. To alleviate this requirement, the patent teaches a "the user focusing technique" that "adds pseudo 'distortion' before the signals are transmitted at the transmitter.... These 'pre-distorted' signals are then transmitted in such a way that the signal distortion can be successfully removed while propagating." *Id*. at 7:51-52, 7:65-8:3. So instead of equalizing at the receiver to remove distortion, the patent teaches to apply a pseudo "distortion" before the transmitter to preemptively remove distortion.

The Patent explains how these pseudo "distortions" or "pre-distortions" are achieved. "[T]he method begins[] where a channel estimation of a first signal is performed so as to obtain

path parameter information of the propagation path." *Id*. at 8:4-7. This is done by transmitting "distorted preambles or training sequences" to the receiver and, in one embodiment, "a channel estimation algorithm is performed to obtain the estimates of the delay τ, the Doppler frequency u, direction of arrival Ω1, direction of departure Ω2, and complex amplitude α for each of the propagation paths." *Id*. at 8:9-15. "Next[] the receiver[] feedbacks these path parameter information to the transmitter… [and] the transmitter 'pre-distorts' a second signal … [based on] the parameters of the paths fed-back form the receiver." *Id*. at 9:1-10. Done properly, such as based on the provided example equation, "the pre-distortion can be removed automatically by the propagation channel, i.e. the channel itself works as an equalizer." *Id*. at 9:52-54.

The Patent goes on to discuss other known techniques in relation to the invention. For example, "[t]he systems and methods described herein can make use of the concept of 'pre-distortion,' which has significant difference from the conventional precoding techniques." *Id*. at 11:60-62. The latter technique uses "simplified representations of channel" in contrast to "the parameters of the propagation channel, e.g. the delay, Doppler frequencies, directions of departure and directions of arrival." *Id*. at 11:62-67. The difference being "[t]he conventional precoding techniques cannot be used to create a concentration of the signal at a central point (which can move) in space." *Id*. at 12:4-6.

i. "PREDISTORTED" ('347 PATENT, CLAIM 19)

Cobblestone agrees with Apple that the parties have two disputes regarding this term, though Apple misconstrues them. First, Cobblestone disagrees with "predistorted" meaning merely any "distortion before transmission." While the focus is correct, that "pre-distortion" occurs before transmission, Apple's construction suggest that any distortion qualifies. Not so. Second, there is no disclaimer regarding "predistorted" to support Apple's negative limitation, instead the described distinction is already claimed. Because Apple's construction is misleading

on the first point and plainly wrong on the second, the Court should reject it for the plain and ordinary meaning of "predistorted."

On the first, both the specification and the claim itself mandate that "predistorted" does not refer to simply any "distortion before transmission." As detailed above, the specification teaches applying a pseudo "distortion," or "pre-distortion," that results in the propagation channel itself acting as an equalizer. *See e.g. id*. at 7:51-8:3. While not quite definitional language, the specification is clear the "pre-distortion" is the "pseudo 'distortion' before the signals are transmitted." *Id*. "Pseudo" modifying "distortion" in scare quotes is distinct from the mere "distorted" in Apple's construction. Indeed, what the distortion actual is, is both taught and claimed to be an intentional modification "in a time domain, a frequency domain, and a spatial domain according to the channel estimation based on the first signal." *See id*. at 9:6-48; *see also id*. at Cl. 19. Again, this is not merely any distortion as Apple's construction suggests.

In contrast, Cobblestone's clarification to the plain and ordinary meaning is derived from how the "pre-distortion" is taught. In particular, "the conventional receiver is not needed anymore, because the pre-distortion can be removed automatically by the propagation channel, i.e. the channel itself works as an equalizer." *Id*. at 9:51-54. Because the channel itself works as the equalizer to remove the pre-distortion, there can be no post-transmission "pre-distortion." Moreover, Apple's counter arguments defy logic. It is unclear how the "plain and ordinary meaning of predistorted which excludes distortion after transmission," Cobblestone's construction, might "not expressly require any distortion before transmission." *See* Dkt. 32 at 5. Likewise, Apple makes clear itself that the focus of this term is "pre-" or "before," i.e. the opposite of after. That, and the discussion above, are more than sufficient "disclaimer" if that is even the appropriate term here, to support "excludes distortion after transmission." Cobblestone agrees that

"predistortion" requires action, e.g. the pseudo "distortion" discussed above, before transmission. It is simply that is the only action captured by this term, nothing after.

On the second, Apple bases its negative limitation to exclude the use of codebook in predistortions on a vague criticism of the codebook prior art. But the Federal Circuit has long held "[m]ere criticism of a particular embodiment encompassed in the plain meaning of a claim term is not sufficient to rise to the level of clear disavowal." *Thorner v. Sony Computer Ent. Am. LLC*, 669 F.3d 1362, 1366 (Fed. Cir. 2012). Moreover, when read closely, the discussion Apple points to, and indeed argues supports disclaimer as to multiple terms, is instead directed to a distinction already claimed. Because Apple cannot support its argued disclaimer, its negative limitation should be rejected.

Apple bases its negative limitation on a short portion of the specification that it must rewrite to create a disclaimer. *See* Dkt. 32 at 6. A plain reading of the section makes abundantly clear the limited distinction being drawn is:

> B. Comparison to Precoding Techniques
> The systems and methods described herein can make use of the concept of "pre-distortion," which has significant difference from the conventional precoding techniques. The latter can make use of simplified representations of [the] channel, e.g. in terms of code-book, while the system and methods described above make use of the parameters of the propagation channel, e.g. the delay, Doppler frequencies, directions of departure and directions of arrival. This full-dimensional parametric description of the channel can be much more accurate than using the codebooks.

'347 patent, 11:59-12:2. This "comparison" explains there is a "significant difference" between two techniques, namely "simplified representations of channel[s], e.g. in terms of code-book" and "parameters of the propagation channel, e.g. the delay, Doppler frequencies, directions of departure and directions of arrival." *Id*. There is no disclaimer here, there is identification of a single, albeit significant difference, that allows for a "much more accurate" description of the channel. *Id*. This is not a disclaimer.

The Federal Circuit has held as much in similar cases. In *Micro Chemical*, the Federal Circuit found no disclaimer when "although the. Applicant noted certain inefficiencies in the [prior] system, the patent never clearly disavows the [prior] method as being incapable of performing the claimed functions." *Micro Chem., Inc. v. Great Plains Chem. Co.*, 194 F.3d 1250, 1260 (Fed. Cir. 1999). Indeed, "merely descib[ing] the [prior] system to facilitate a comparison" to "point[] out numerous features which were distinguishable from the preferred embodiment of the invention" did not reach disavowal where, as here, such a distinction was already claimed. *Id*. at 1260-61. At best, the comparison to precoding techniques points out one feature that is distinguishable but is also already claimed, namely "the delay, Doppler frequencies, directions of departure and directions of arrival." The specification explains the "significant difference from the conventional precoding techniques" is the use of these "parameters of the propagation channel" rather than "simplified representations of channel[s]." '347 at 11:61-65. But that difference is already claimed: "the second signal predistorted in a time domain, a frequency domain, and a spatial domain according to the channel estimation based on the first signal." No disavowal was made and no additional construction is needed to manifest the applicant's intent with this comparison.

Similarly, in *Honeywell*, the Federal Circuit found without "broad and unequivocal" language like the "'all embodiments' language in the patents at issue in *SciMed*" the specification did not "require the claimed invention[] solve both problems identified in the prior art." *Honeywell Inc. v. Victor Co. of Japan*, 298 F.3d 1317 (Fed. Cir. 2002). The same is true here. There is no broad unequivocal language used to mandate that the claimed invention "be much more accurate than using the codebooks."

In contrast, the case law cited by Apple is distinguishable, requiring a very high standard to find disclaimer from the disparagement of prior art. In *SciMed*, the Federal Circuit based its disclaimer finding on what was described as "the basic sleeve structure for ***all embodiments of the present invention***." *SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys., Inc.*, 242 F.3d 1337 (Fed. Cir. 2001). Here, Apple cannot point to similarly broad, unequivocal language. Instead, Apple contends "a section that is focused entirely on comparing predistortion and precoding[,] makes clear that 'pre-distortion' does not including precoding." Dkt. 32 at 6-7. But that is not even true. The section notes one "significant difference" that "simplified representations of channel[s], e.g. in terms of code-book" are different from "parameters of the propagation channel, e.g. the delay…" *See* '347 Patent at 11:61-66. While there are some broad references to "[t]he systems and method described herein [that] can make use of the concept of 'pre-distortion,'" *id*. at 11:60-61, they are not comparable to "all embodiments of the present invention." Without that broad, unequivocal language, *SciMed* is inapposite.

Likewise, in *Gaus*, the specification criticized the prior art that "in any event a shock will not be completely prevented" while "the invention[]has a protective device … [which] accomplishes this disconnection before the user can be connected to voltage-carrying exposed parts…" *See Gaus v. Conair Corp.*, 363 F.3d 1284, 1291 (Fed. Cir. 2004); *see also* Ex. 2 (US 4,589,047 at 2:13-20, 3:34-42).[3] Apple does not, and cannot, identify similarly disclaiming

[3] The portion Apple's cites from *David Netzer* did not find a disclaimer of prior art, rather distinguishing between the specifications use of "conventional fractionation" and "conventional extraction." *David Netzer Consulting Eng'r LLC v. Shell Oil Co.*, 824 F.3d 989, 995 (Fed. Cir. 2016) ("Thus, according to the patentee, conventional extraction and conventional fractionation are different methods. Unlike conventional fractionation, conventional extraction—which includes the Sulfolane process—can successfully remove non-aromatic hydrocarbon azeotropes to produce highly pure benzene. The Sulfolane process is therefore conventional extraction, *not* "conventional fractionation." The Sulfolane process was developed by Shell in the 1960s; it is a conventional method of separation. If one were to adopt Netzer's proposed construction that "fractionation" means separation by any method, then "conventional fractionation" would mean separation by any conventional method, which would encompass the Sulfolane process. That interpretation would be contrary to the specification.")

language. A section generally about the deficiencies of prior techniques is not comparable to an explanation that the prior art does one thing, e.g. cause a shock, that the invention categorically prevents. *Gaus* is thus inapplicable.

Because Apple's construction confuses pseudo "distortions" with distortions and inserts a negative limitation based on a faulty reading of a comparison to prior art, it must be rejected. In contrast, Cobblestone's construction only clarifies the plain meaning that the pseudo "distortions" occur before transmission, not after.

ii. "PATH PARAMETER INFORMATION" ('347 PATENT, CLAIMS 19-22)

The parties' dispute as to this term is the necessity of Apple's construction and the appropriateness of a negative limitation. Apple's construction is unnecessary and confusing and a second attempt at the same negative limitation is no more appropriate here than above. Apple's construction should be rejected in favor of the plain and ordinary meaning.

As Apple says, "path propagation information" does not have a special meaning, *see* Dkt. 32 at 7, rather it merely describes information about a propagation path. Cobblestone agrees, and it is obvious from the claims, this includes estimated parameters of the propagation path. *See* '347 Patent at Cl 19 ("performing a channel estimation based on the first signal to obtain ***path parameter information*** of the first propagation path"). But limiting "path propagation information" in this way, reads it out of the claim. If "path propagation information" were merely "estimated parameters of the propagation path" it could easily be removed from the claims, e.g.: "performing a channel estimation based on the first signal; sending the channel estimation to the transmitter." Such a change does not even require a rewriting of the claim, simple deletion of the disputed term effects Apple's construction.

Rather, the true thrust of Apple's construction is a second attempt at the exclusion of code-book. But again, no such negative limitation is supported. Apple points to the same language that, as explained above, supports no disclaimer only shifting Apple's emphasis from "predistorted." Indeed, Apple's attempt to apply the same negative limitation based on the same discussion to two different limitations only highlights that this discussion is vague and hardly a clear disavowal.

This time, Apple takes a section it previously said was "focused entirely on comparing predistortion and precoding" to now allege it also "makes clear that 'path parameter information' does not include simplified representations of the channel." Dkt. 32 at 8. Beyond Apple's shifting positions on what should be clear and unambiguous, there is still no clear disavowal in this section and if there is, it is already claimed.

Briefly, unlike in *SciMed*, there is no broad, unequivocal language like "all embodiments of the present invention."242 F.3d at 1344. Instead, Apple contends the "specification makes clear that 'path parameter information' does not include simplified representations of the channel." Dkt. 32 at 8. In reality, the section notes one "significant difference" between the conventional system and "[t]he systems and methods described herein [that] can make use of the concept of 'pre-distortion.'" *See* '347 Patent at 11:60-61. That difference being "simplified representations of channel[s], e.g. in terms of code-book" and "parameters of the propagation channel, e.g. the delay…" *Id*. at 11:62-67. But this is a difference between "simplified representations" and "parameters of the propagation channel", not "path parameter information." The claim term does not even appear in this section. Instead, Apple would insist "parameters of the propagation channel" is close enough. No. *SciMed* calls for broad, unequivocal language, not close enough.

Moreover, what is clear from this section, that the "pre-distortion technique" uses "the delay, Doppler frequencies, directions of departure and directions of arrival" is already, expressly

claimed. *See id*. at Cl 19. Because the only element clearly applicable to the invention is already claimed, the Court should disregard both tenuous alternative disclaimers Apple proposes in favor of the plain and ordinary meaning.

III. CONCLUSION

For the reasons provided above, Apple's proposed constructions should be disregarded and the Court should adopt Cobblestone's constructions.

Dated: May 30, 2025

Respectfully submitted,

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CERTIFICATE OF SERVICE

I certify that on May 30, 2025, a true and correct copy of the foregoing document was electronically filed with the Court and served on all parties of record via the Court's CM/ECF system.

/s/ Reza Mirzaie
Reza Mirzaie